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**ENTERED**  
*See page 6*

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**RAW SEQUENCE LISTING**

DATE: 05/23/2002

PATENT APPLICATION: US/09/769,744A

TIME: 17:42:26

Input Set : D:\sequence listing for 09-769744.txt

Output Set: N:\CRF3\05232002\I769744A.raw

3 <110> APPLICANT: Le Page, Richard WF  
4 Wells, Jeremy M  
5 Hanniffy, Sean B  
6 Hansbro, Philip M  
8 <120> TITLE OF INVENTION: Proteins  
10 <130> FILE REFERENCE: PWC/P21122WO  
12 <140> CURRENT APPLICATION NUMBER: US 09/769744A  
13 <141> CURRENT FILING DATE: 2001-01-26  
15 <150> PRIOR APPLICATION NUMBER: PCT/GB99/02452  
16 <151> PRIOR FILING DATE: 1999-07-27  
18 <150> PRIOR APPLICATION NUMBER: GB 9816336.3  
19 <151> PRIOR FILING DATE: 1998-07-27  
21 <150> PRIOR APPLICATION NUMBER: US 60/125329  
22 <151> PRIOR FILING DATE: 1999-03-19  
24 <160> NUMBER OF SEQ ID NOS: 196  
26 <170> SOFTWARE: PatentIn Ver. 2.1  
28 <210> SEQ ID NO: 1  
29 <211> LENGTH: 1200  
30 <212> TYPE: DNA  
31 <213> ORGANISM: Streptococcus pneumoniae  
33 <400> SEQUENCE: 1  
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35 ttcttcttta tgggtgatttc gccgttccctc tttttaggaa tctctgtagg aattgggcat 120  
36 ctccaagggt cttctatggc taaaaataat aaagtggcag tagtgacaac agtgccatct 180  
37 gtagcagaag gactgaagaa tgtaaattgt gtttaacttcg actataaaga cgaagcaagt 240  
38 gccaaagaag caattaaaga agaaaaatta aaaggttatt tgaccattga tcaagaagat 300  
39 agtgttctaa aggcagttta tcatggcgaa acatcgcttg aaaatggaat taaatttgag 360  
40 gttacaggta cactcaatga actgcaaaat cagcttaatc gttcaactgc ttccttgtct 420  
41 caagagcagg aaaaacgctt agcgcagaca attcaattca cagaaaagat tgatgaagcc 480  
42 aaggaaaaata aaaagtttat tcaaacaatt gcagcaggtg ccttaggatt ctttctttat 540  
43 atgattctga ttacctatgc ggggtgaaca gctcaggaag ttgccagtga aaaaggcacc 600  
44 aaaattatgg aagtcgtttt ttctagcata agggcaagtc actatttcta tgcgcggatg 660  
45 atggctctgt ttctagtgat tttaacgcac attgggatct atgttgtagg tggctctggct 720  
46 gccgttttgc tctttaaaga tttgccattc ttggctcagt ctggtatttt ggatcacttg 780  
47 ggagatgcta tctcaactga taccttgcctc tttattttga tcagtctttt catgtacgta 840  
48 gtcttggcag ccttcttagg atctatgggt tctcgtcctg aggactcagg gaaagccttg 900  
49 tcgcctttga tgattttgat tatgggtggg ttttttgag tgacagctct aggtgcagct 960  
50 ggtgacaatc tctcttgaa gattggttct tatattccct ttatttcgac cttctttatg 1020  
51 ccgtttcgaa cgattaatga ctatgcgggg ggagcagaag catggatttc acttgctatt 1080  
52 acagtgattt ttgcggtggg agcaacagga tttatcggac gcatgtatgc tagtctcggt 1140  
53 cttcaaacgg atgatttagg gatttggaac acctttaaac gtgccttata ttataaatag 1200  
56 <210> SEQ ID NO: 2  
57 <211> LENGTH: 399

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58 <212> TYPE: PRT
59 <213> ORGANISM: Streptococcus pneumoniae
61 <400> SEQUENCE: 2
62 Met Arg Asn Met Trp Val Val Ile Lys Glu Thr Tyr Leu Arg His Val
63   1           5           10           15
65 Glu Ser Trp Ser Phe Phe Phe Met Val Ile Ser Pro Phe Leu Phe Leu
66           20           25           30
68 Gly Ile Ser Val Gly Ile Gly His Leu Gln Gly Ser Ser Met Ala Lys
69           35           40           45
71 Asn Asn Lys Val Ala Val Val Thr Thr Val Pro Ser Val Ala Glu Gly
72           50           55           60
74 Leu Lys Asn Val Asn Gly Val Asn Phe Asp Tyr Lys Asp Glu Ala Ser
75   65           70           75           80
77 Ala Lys Glu Ala Ile Lys Glu Glu Lys Leu Lys Gly Tyr Leu Thr Ile
78           85           90           95
80 Asp Gln Glu Asp Ser Val Leu Lys Ala Val Tyr His Gly Glu Thr Ser
81           100          105          110
83 Leu Glu Asn Gly Ile Lys Phe Glu Val Thr Gly Thr Leu Asn Glu Leu
84           115          120          125
86 Gln Asn Gln Leu Asn Arg Ser Thr Ala Ser Leu Ser Gln Glu Gln Glu
87           130          135          140
89 Lys Arg Leu Ala Gln Thr Ile Gln Phe Thr Glu Lys Ile Asp Glu Ala
90   145          150          155          160
92 Lys Glu Asn Lys Lys Phe Ile Gln Thr Ile Ala Ala Gly Ala Leu Gly
93           165          170          175
95 Phe Phe Leu Tyr Met Ile Leu Ile Thr Tyr Ala Gly Val Thr Ala Gln
96           180          185          190
98 Glu Val Ala Ser Glu Lys Gly Thr Lys Ile Met Glu Val Val Phe Ser
99           195          200          205
101 Ser Ile Arg Ala Ser His Tyr Phe Tyr Ala Arg Met Met Ala Leu Phe
102           210          215          220
104 Leu Val Ile Leu Thr His Ile Gly Ile Tyr Val Val Gly Gly Leu Ala
105   225          230          235          240
107 Ala Val Leu Leu Phe Lys Asp Leu Pro Phe Leu Ala Gln Ser Gly Ile
108           245          250          255
110 Leu Asp His Leu Gly Asp Ala Ile Ser Leu Asn Thr Leu Leu Phe Ile
111           260          265          270
113 Leu Ile Ser Leu Phe Met Tyr Val Val Leu Ala Ala Phe Leu Gly Ser
114           275          280          285
116 Met Val Ser Arg Pro Glu Asp Ser Gly Lys Ala Leu Ser Pro Leu Met
117           290          295          300
119 Ile Leu Ile Met Gly Gly Phe Phe Gly Val Thr Ala Leu Gly Ala Ala
120   305          310          315          320
122 Gly Asp Asn Leu Leu Lys Ile Gly Ser Tyr Ile Pro Phe Ile Ser
123           325          330          335
125 Thr Phe Phe Met Pro Phe Arg Thr Ile Asn Asp Tyr Ala Gly Gly Ala
126           340          345          350
128 Glu Ala Trp Ile Ser Leu Ala Ile Thr Val Ile Phe Ala Val Val Ala
129           355          360          365

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Input Set : D:\sequence listing for 09-769744.txt

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131 Thr Gly Phe Ile Gly Arg Met Tyr Ala Ser Leu Val Leu Gln Thr Asp
132      370                      375                      380
134 Asp Leu Gly Ile Trp Lys Thr Phe Lys Arg Ala Leu Ser Tyr Lys
135 385                      390                      395
139 <210> SEQ ID NO: 3
140 <211> LENGTH: 1125
141 <212> TYPE: DNA
142 <213> ORGANISM: Streptococcus pneumoniae
144 <400> SEQUENCE: 3
145 cctgggaaag tcttgaaaat tatgatagaa tgggtggaagg aaaaattcag gagagtagta 60
146 gtgactcaaa atgttgaaaag tcttctcgta tccattgtaa tcagtgcata caatgaagaa 120
147 aaatatctgc ctggttctaata tgaagactta aaaaatcaaa cctatcctaa agaggatatt 180
148 gaaattctat ttataaatgc tatgtccaca gatgggacca cagctatcat tcagcaattt 240
149 ataaaggaag atacagagtt taactcaatt agattgtata acaatcctaa gaaaaatcaa 300
150 gctagtgggt ttaacctggg agttaaacat tctgtagggg accttatttt aaaaattgat 360
151 gctcattcaa aagttactga gacttttgta atgaacaatg tggctattat tcaacaaggt 420
152 gaatttgtct gtggggggcc tagaccgacg attgtcgaag gaaaaggaaa atgggcagag 480
153 accttgcatc ttgttgagga aaatatgttt ggcagtagca ttgccaatta tcgaaatagt 540
154 tctgaggata gatatgtttc ttctattttt catggaatgt ataaacgaga ggttttccag 600
155 aaggttgggt tagtaaatga gcaacttggc cgaactgaag ataatgatat tcattataga 660
156 attcgagaat atggttataa aatccgctat agcccaagta ttctatctta tcagtatatt 720
157 cgaccaacat tcaagaaaat gctgcatcaa aagtattcaa atggtttgtg gattggcttg 780
158 acaagtcatg ttcagtttaa gtgtttatca ttatttctact atgttccttg tttatttggt 840
159 ttgagtcctg tgtttagtct agcattgtta ccgatcacat tcgtattcat aactttacta 900
160 ttaggtgcct attttctact tttgtcatta ctactttgc tgactttatt aaaacataaa 960
161 aatggatttc taattgtgat gccctttatt ttattttcca ttcactttgc ttatggcctt 1020
162 gggacgattg taggtttaat tagaggattt aaatggaaga aggagtacaa gagaacaata 1080
163 atttatttgg ataaaataag ccaaataaat caaaatatgc tataa 1125
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167 <211> LENGTH: 374
168 <212> TYPE: PRT
169 <213> ORGANISM: Streptococcus pneumoniae
171 <400> SEQUENCE: 4
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173 1 5 10 15
175 Arg Arg Val Val Val Thr Gln Asn Val Glu Ser Leu Leu Val Ser Ile
176 20 25 30
178 Val Ile Ser Ala Tyr Asn Glu Glu Lys Tyr Leu Pro Gly Leu Ile Glu
179 35 40 45
181 Asp Leu Lys Asn Gln Thr Tyr Pro Lys Glu Asp Ile Glu Ile Leu Phe
182 50 55 60
184 Ile Asn Ala Met Ser Thr Asp Gly Thr Thr Ala Ile Ile Gln Gln Phe
185 65 70 75 80
187 Ile Lys Glu Asp Thr Glu Phe Asn Ser Ile Arg Leu Tyr Asn Asn Pro
188 85 90 95
190 Lys Lys Asn Gln Ala Ser Gly Phe Asn Leu Gly Val Lys His Ser Val
191 100 105 110
193 Gly Asp Leu Ile Leu Lys Ile Asp Ala His Ser Lys Val Thr Glu Thr
194 115 120 125

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196 Phe Val Met Asn Asn Val Ala Ile Ile Gln Gln Gly Glu Phe Val Cys
197      130                      135                      140
199 Gly Gly Pro Arg Pro Thr Ile Val Glu Gly Lys Gly Lys Trp Ala Glu
200 145                      150                      155                      160
202 Thr Leu His Leu Val Glu Glu Asn Met Phe Gly Ser Ser Ile Ala Asn
203                      165                      170                      175
205 Tyr Arg Asn Ser Ser Glu Asp Arg Tyr Val Ser Ser Ile Phe His Gly
206                      180                      185                      190
208 Met Tyr Lys Arg Glu Val Phe Gln Lys Val Gly Leu Val Asn Glu Gln
209                      195                      200                      205
211 Leu Gly Arg Thr Glu Asp Asn Asp Ile His Tyr Arg Ile Arg Glu Tyr
212      210                      215                      220
214 Gly Tyr Lys Ile Arg Tyr Ser Pro Ser Ile Leu Ser Tyr Gln Tyr Ile
215 225                      230                      235                      240
217 Arg Pro Thr Phe Lys Lys Met Leu His Gln Lys Tyr Ser Asn Gly Leu
218                      245                      250                      255
220 Trp Ile Gly Leu Thr Ser His Val Gln Phe Lys Cys Leu Ser Leu Phe
221                      260                      265                      270
223 His Tyr Val Pro Cys Leu Phe Val Leu Ser Leu Val Phe Ser Leu Ala
224                      275                      280                      285
226 Leu Leu Pro Ile Thr Phe Val Phe Ile Thr Leu Leu Leu Gly Ala Tyr
227      290                      295                      300
229 Phe Leu Leu Leu Ser Leu Leu Thr Leu Leu Thr Leu Leu Lys His Lys
230 305                      310                      315                      320
232 Asn Gly Phe Leu Ile Val Met Pro Phe Ile Leu Phe Ser Ile His Phe
233                      325                      330                      335
235 Ala Tyr Gly Leu Gly Thr Ile Val Gly Leu Ile Arg Gly Phe Lys Trp
236                      340                      345                      350
238 Lys Lys Glu Tyr Lys Arg Thr Ile Ile Tyr Leu Asp Lys Ile Ser Gln
239      355                      360                      365
241 Ile Asn Gln Asn Met Leu
242      370

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246 &lt;210&gt; SEQ ID NO: 5

247 &lt;211&gt; LENGTH: 696

248 &lt;212&gt; TYPE: DNA

249 &lt;213&gt; ORGANISM: Streptococcus pneumoniae

251 &lt;400&gt; SEQUENCE: 5

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252 atgatgaaag aacaaaatac gatagaaatc gatgtatttc aattagttaa aagcttgtgg 60
253 aaacgcaagc taatgatttt aatagtggca cttgtgacag gtgcgggggc ttttgcata 120
254 agcactttta ttgttaagcc agaataacg agtaccacgc gaatttacgt agtgaatcgc 180
255 aatcaaggag acaagccggg gttgacaaat caggatttgc aggcaggaac ttatctggta 240
256 aaagactacc gtgagattat ctttcgcag gatgttttgg aggaagtgtt ttctgatttg 300
257 aaactagatt tgacgcaaaa aggtttggct aataaaatta aagtgcagat accagtgtg 360
258 acccgtattg tctctatttc agttaatgat cgagttcctg aagaggcaag ccgtatcgct 420
259 aactctttga gagaagtagc tgctcaaaaa attatcagta ttactcgtgt ttctgacgtg 480
260 acaacactgg aggaggcaag gccggcgata tccccgtctt cgccaaatat taaacgcaat 540
261 aactaattg gttttttggc aggggtgatt ggaactagt ttatagttct tcatcttgaa 600
262 cttttggata ctctgttgaa acgtccggaa gatatcgaaa atacattgca gatgacactt 660
263 ttgggagttg tgccaaactt gggttaagttg aaatag 696

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TIME: 17:42:26

Input Set : D:\sequence listing for 09-769744.txt

Output Set: N:\CRF3\05232002\I769744A.raw

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266 <210> SEQ ID NO: 6
267 <211> LENGTH: 231
268 <212> TYPE: PRT
269 <213> ORGANISM: Streptococcus pneumoniae
271 <400> SEQUENCE: 6
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273   1           5           10           15
275 Lys Ser Leu Trp Lys Arg Lys Leu Met Ile Leu Ile Val Ala Leu Val
276           20           25           30
278 Thr Gly Ala Gly Ala Phe Ala Tyr Ser Thr Phe Ile Val Lys Pro Glu
279           35           40           45
281 Tyr Thr Ser Thr Thr Arg Ile Tyr Val Val Asn Arg Asn Gln Gly Asp
282           50           55           60
284 Lys Pro Gly Leu Thr Asn Gln Asp Leu Gln Ala Gly Thr Tyr Leu Val
285   65           70           75           80
287 Lys Asp Tyr Arg Glu Ile Ile Leu Ser Gln Asp Val Leu Glu Glu Val
288           85           90           95
290 Val Ser Asp Leu Lys Leu Asp Leu Thr Pro Lys Gly Leu Ala Asn Lys
291           100          105          110
293 Ile Lys Val Thr Val Pro Val Asp Thr Arg Ile Val Ser Ile Ser Val
294           115          120          125
296 Asn Asp Arg Val Pro Glu Glu Ala Ser Arg Ile Ala Asn Ser Leu Arg
297           130          135          140
299 Glu Val Ala Ala Gln Lys Ile Ile Ser Ile Thr Arg Val Ser Asp Val
300  145          150          155          160
302 Thr Thr Leu Glu Glu Ala Arg Pro Ala Ile Ser Pro Ser Ser Pro Asn
303           165          170          175
305 Ile Lys Arg Asn Thr Leu Ile Gly Phe Leu Ala Gly Val Ile Gly Thr
306           180          185          190
308 Ser Val Ile Val Leu His Leu Glu Leu Leu Asp Thr Arg Val Lys Arg
309           195          200          205
311 Pro Glu Asp Ile Glu Asn Thr Leu Gln Met Thr Leu Leu Gly Val Val
312           210          215          220
314 Pro Asn Leu Gly Lys Leu Lys
315  225          230
319 <210> SEQ ID NO: 7
320 <211> LENGTH: 555
321 <212> TYPE: DNA
322 <213> ORGANISM: Streptococcus pneumoniae
324 <400> SEQUENCE: 7
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326 gtagatgtct tgcgtcgagc caatatacaca tgtgatatgg ttggttttga agagcaagta 120
327 acgggttcgc atgcaatcca agtaagagca gatcatgtct ttgatggaga tttatcagac 180
328 tatgatatga ttgttcttcc tggaggtatg cctgggtctg cacatttacg tgataatcag 240
329 accttgattc aagaattgca aagcttcgag caagaaggga agaaactagc agccatttgt 300
330 gcggcaccaa ttgccctcaa tcaagcagag atattgaaaa ataagcgata cacttgttat 360
331 gacggcggttc aagagcaaat ccttgatggg cactacgtca aggaaacagt agtggttagat 420
332 ggtcagttga caaccagtcg gggtccttca acagcccttg cctttgccta cgagttggtg 480
333 gagcaactag gaggggacgc agagagttta cgaacaggaa tgctctatcg agatgtcttt 540

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RAW SEQUENCE LISTING ERROR SUMMARY      DATE: 05/23/2002  
PATENT APPLICATION: US/09/769,744A      TIME: 17:42:27

Input Set : D:\sequence listing for 09-769744.txt  
Output Set: N:\CRF3\05232002\I769744A.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:182; Xaa Pos. 3

VERIFICATION SUMMARY

DATE: 05/23/2002

PATENT APPLICATION: US/09/769,744A

TIME: 17:42:27

Input Set : D:\sequence listing for 09-769744.txt

Output Set: N:\CRF3\05232002\I769744A.raw

L:9148 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:182 after pos.:0